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U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE
WATER SUPPLY OUTLOOK
FOR
MONTANA

and
FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS
Collaborating with
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF
APR. 1, 1980



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FIRST CLASS MAIL

WATER SUPPLY SHORTAGE

Snow surveys indicate that the amount of water stored in some of the mountain snowpacks is well below average. This will cause low summer stream flows and below normal supplies of irrigation water.

Farm managers who depend on natural stream flows for irrigation or who have later water rights may wish to consider some of the following alternatives to reduce the need for irrigation water:

- * Reduce the amount of irrigated land planted.
- * Plant and irrigate the best land first.
- * Plant crops with lower water requirements.
- * Plant early maturing crops.
- * Select crop varieties that are more drought tolerant.
- * Keep ditches clean.

- * Fix irrigation pipeline leaks, and check sprinkler head nozzles to insure proper delivery rates.
- * Improve irrigation efficiency by applying the proper amount of water at the proper time.
- * Delay plantings of hay or pasture until better water supplies are available.
- * Use small grains for hay if the short water supply will reduce the irrigated hay crop.
- * Use recommended amounts of fertilizer.
- * Plant feed crops such as small grains, corn or millet to replace lost pasture production.
- * Consider renting pasture and/or purchasing hay early if needed to carry over livestock herd.

Prepared by T. A. Bown, Agronomist
and A. E. Kallestad, Engineer,
Montana SCS staff.

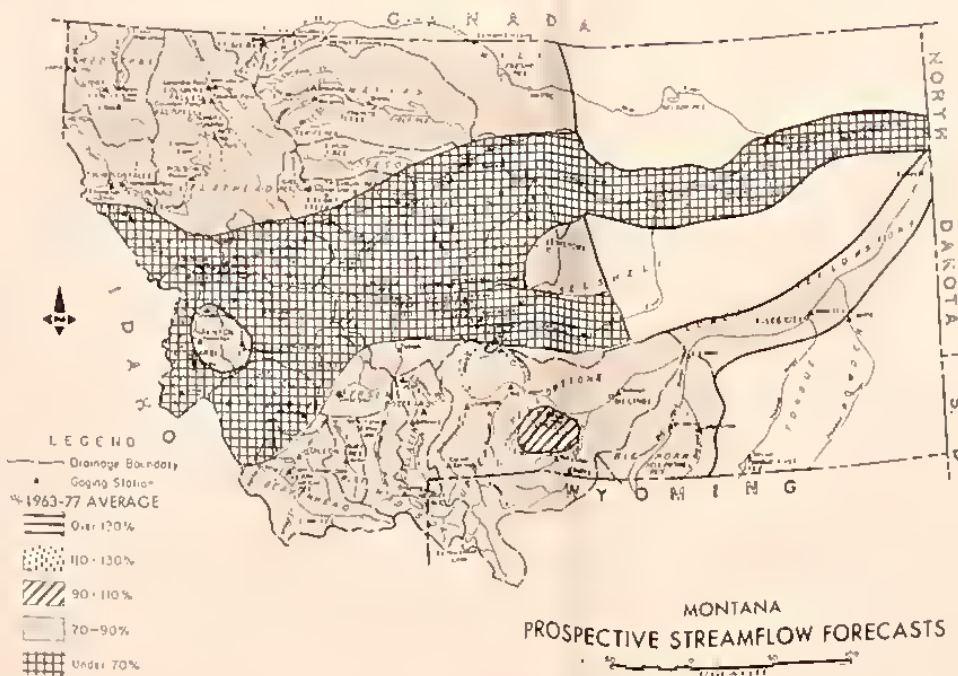
STATEWIDE STREAMFLOW

All forecasts increased as a result of improved snowpack conditions. However, most of the Clark Fork River drainage west of the divide and the Missouri River and its tributaries below Canyon Ferry Reservoir are still forecast in the 60 to 70 percent of average range. Most of the Yellowstone, upper Missouri, and Flathead River drainages are expected to generate about 70 to 80 percent of average runoff.

The Kootenai River is forecast at about 15 percent below average because of better snowpack conditions in the headwaters area in British Columbia. Smaller tributary streams flowing into the Kootenai in Montana are forecast nearer to 70 percent of average.

The Stillwater and Bighorn Rivers in the Yellowstone drainage should have runoff about ten percent below average. Red Lodge Creek, a small stream in the Yellowstone drainage, is the only area in the state where near average runoff is expected.

Shortages of late season irrigation water are still expected in most areas, but should not be as severe as expected a month ago. The temperature and mountain precipitation over the next two months will determine their severity.



STATEWIDE SNOWPACK

Most areas had above average snowfall in March. Only portions of the Kootenai River drainage in Montana showed a less than average increase. This was due to less than normal snowfall and some snow melt during March.

General storm systems moving through the state increased the deficient snowpack. Very little melt has been noted above the valley areas. Snowfall was particularly heavy near the end of March in south-central Montana.

Presently, most of Montana has about 80 percent of average snowpack. Some small areas in the southwest and south-central portions and in the Snowy Mountains near Lewistown have near average snowpack.

Even with this improvement, most areas still have deficient snow cover.

PUBLIC MEETINGS

All responses received by the Soil Conservation Service on alternatives for managing the Snow Survey and Water Supply Forecast program have been summarized.

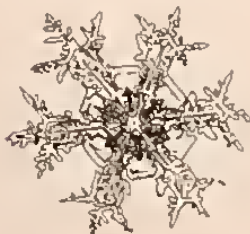
The committee that met recently in Portland, Oregon, has forwarded its recommended alternatives to the SCS national office in Washington, D.C. These recommendations will be given to the Secretary of

Agriculture who will make the final decision on how this program will be managed. His decision will be published in the Federal Register, and everyone who commented should receive notification of that decision.

If the decision is available prior to June 1, it will be printed in the Water Supply Outlook.

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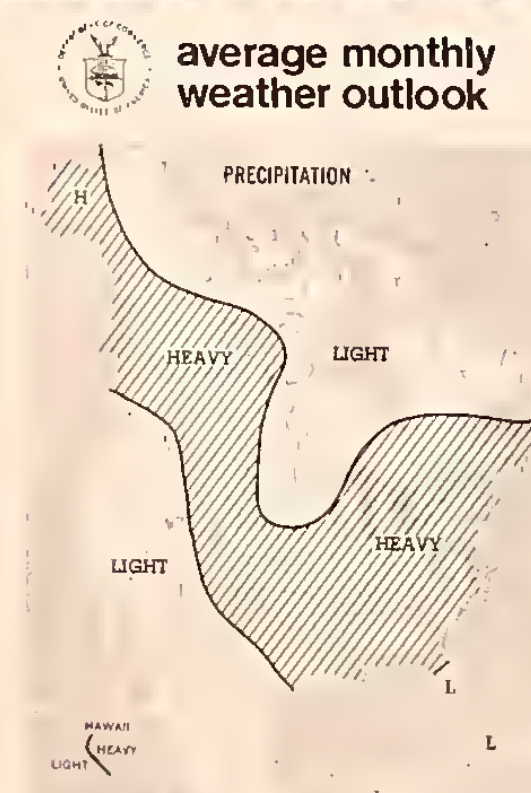


POUNDAGE LIME	10800	7/25	65	37.4	11.5	22.6
POUNDAGE	9800	7/27	42	12.7	11.4	14.4
POUND FALLS	9500	7/27	49	12.8	11.4	14.4
POUNDAGE PILLAR	9000	7/27	44	12.5	11.4	14.4
POUND PILLAR	8500	7/27	125	101.9	54.0	64.7
POUND PILLAR	8000	7/27	44	12.2	14.5	14.6
POUND PILLAR	7500	7/27	54	15.6	15.5	25.0
POUND PILLAR	7000	7/27	57	17.3	16.1	22.5
POUND PILLAR	6500	7/27	57	37.5	41.6	30.3
POUND PILLAR	6000	7/27	67	32.4	35.7	36.6
POUND PILLAR	5500	7/27	26	7.0	7.9	9.8
POUND PILLAR	5000	7/27	35	11.0	14.0	-
POUND PILLAR	4500	7/27	35	7.4	9.0	6.4
POUND PILLAR	4000	7/27	35	6.8	12.9	11.5
POUND PILLAR	3500	7/27	41	11.0	9.1	-
POUND PILLAR	3000	7/27	62	20.0	17.2	23.3
POUND PILLAR	2500	7/27	122	17.6	-	64.2
POUND PILLAR	2000	7/27	17	4.6	10.2	7.3
POUND PILLAR	1500	7/27	60	18.7	24.5	25.0
POUND PILLAR	1000	7/27	32	7.8	7.1	8.1
POUND PILLAR	750	7/27	122	46.9	38.8	47.1
POUND PILLAR	500	7/27	61	14.6	13.7	17.3
POUND PILLAR	250	7/27	34	10.0	9.7	10.0
POUND PILLAR	100	7/27	0	20.2	24.0	24.1
POUND PILLAR	0	7/27	55	18.7	21.0	22.0
POUND PILLAR	7500	7/27	114	39.8	39.8	44.1
POUND PILLAR	7000	7/27	57	25.0	36.1	40.0
POUND PILLAR	6500	7/27	59	34.8	35.6	35.4
POUND PILLAR	6000	7/27	103	37.0	39.6	40.3
POUND PILLAR	5500	7/27	82	17.3	15.3	-
POUND PILLAR	5000	7/27	54	10.0	13.1	15.5
POUND PILLAR	4500	7/27	57	11.3	13.9	16.0
POUND PILLAR	4000	7/27	44	12.0	13.6	14.6
POUND PILLAR	3500	7/27	64	21.2	-	28.0
POUND PILLAR	3000	7/27	43	14.4	-	17.7
POUND PILLAR	2500	7/27	39	9.2	7.0	9.1
POUND PILLAR	2000	7/27	34	16.0	20.5	20.7
POUND PILLAR	1500	7/27	57	17.8	20.6	-
POUND PILLAR	1000	7/27	33	9.1	7.5	8.3
POUND PILLAR	500	7/27	41	11.4	13.4	14.2
POUND PILLAR	0	7/27	57	10.1	-	-
POUND PILLAR	7500	7/27	29	7.4	-	8.6
POUND PILLAR	8850	7/25	77	24.4	26.2	31.3
POUND PILLAR	7200	7/25	71	25.1	25.9	36.2
POUND PILLAR	5000	7/26	57	20.4	23.4	29.5
POUND PILLAR	3900	7/25	23	5.0	8.3	12.6
POUND PILLAR	3000	7/26	32	8.2	10.6	10.6
POUND PILLAR	6600	7/27	27	5.6	9.2	6.7
POUND PILLAR	5200	7/27	22	5.6	8.9	7.2
POUND PILLAR	8150	7/26	50	14.2	12.4	13.1
POUND PILLAR	6450	7/26	35	10.6	10.8	10.2
POUND PILLAR	6450	7/26	57	7.7	7.9	9.8
POUND PILLAR	6400	7/26	113	42.3	42.8	52.0
POUND PILLAR	7750	7/26	42	9.2	5.4	7.7
POUND PILLAR	7750	7/26	32	15.0	16.4	16.9
POUND PILLAR	9000	7/26	56	31.3	33.6	38.5
POUND PILLAR	7400	7/26	57	24.4	-	29.0
POUND PILLAR	4100	7/25	27	6.5	7.0	6.6
POUND PILLAR	3700	7/26	38	8.4	-	14.2
POUND PILLAR	6200	7/26	43	13.1	10.2	10.5
POUND PILLAR	8050	7/27	26	4.6	5.0	4.2
POUND PILLAR	8050	7/27	38	11.7	13.6	-
POUND PILLAR	8600	7/26	61	19.1	14.4	19.7
POUND PILLAR	7850	7/27	74	19.4	18.6	19.6
POUND PILLAR	7850	7/27	57	17.4	17.2	19.4
POUND PILLAR	6300	7/26	32	7.9	9.1	9.6
POUND PILLAR	5600	7/26	20	5.1	7.6	6.5
POUND PILLAR	5600	7/26	57	5.4	7.5	6.8
POUND PILLAR	5200	7/26	58	16.0	21.2	21.3
POUND PILLAR	5200	7/26	32	8.2	12.9	11.8
POUND PILLAR	5200	7/26	57	10.1	15.6	14.8
POUND PILLAR	6950	7/26	75	24.4	26.8	34.2
POUND PILLAR	6950	7/26	57	25.7	-	42.8
POUND PILLAR	5700	7/26	45	12.0	16.9	16.1
POUND PILLAR	6100	7/26	EST	18.3	24.5	26.3
POUND PILLAR	7700	7/26	42	10.6	11.0	12.2
POUND PILLAR	4200	7/26	28	9.1	9.7	10.7
POUND PILLAR	8100	7/27	36	8.9	12.4	11.5
POUND PILLAR	6100	7/26	66	15.4	13.7	15.7
POUND PILLAR	8400	7/26	62	18.3	11.4	18.8
POUND PILLAR	7600	7/27	37	9.0	14.2	12.0
POUND PILLAR	5780	7/26	43	11.6	12.2	13.1
POUND PILLAR	8600	7/26	66	21.4	26.0	30.1
POUND PILLAR	7400	7/26	71	21.8	19.0	27.6
POUND PILLAR	6450	7/27	34	9.2	12.2	12.1
POUND PILLAR	8450	7/27	57	8.3	11.0	11.1
POUND PILLAR	5600	7/26	48	14.0	15.3	17.3
POUND PILLAR	8100	7/26	69	19.1	19.2	24.8
POUND PILLAR	7050	7/26	36	10.2	10.3	11.9
POUND PILLAR	7800	7/26	43	12.6	10.8	12.2
POUND PILLAR	6400	7/26	35	10.7	11.2	10.4
POUND PILLAR	7000	7/26	51	13.6	16.4	16.1
POUND PILLAR	5400	7/26	15	4.6	-	8.7
POUND PILLAR	7800	7/26	52	15.4	23.7	23.6
POUND PILLAR	7800	7/26	34	7.7	8.0	10.1
POUND PILLAR	6000	7/26	57	10.0	16.2	16.7
POUND PILLAR	4050	7/26	46	13.6	13.3	17.1
POUND PILLAR	4350	7/26	57	12.9	14.7	-
POUND PILLAR	5050	7/26	79	24.4	25.4	29.1
POUND PILLAR	8100	7/26	40	8.2	9.0	9.3
POUND PILLAR	9100	7/26	100	35.3	36.0	41.3
POUND PILLAR	5100	7/26	57	32.2	35.0	36.7
POUND PILLAR	7500	7/26	23	5.2	5.7	8.4
POUND PILLAR	5700	7/26	23	5.9	-	7.6
POUND PILLAR	6300	7/26	EST	45.7	-	51.6
POUND PILLAR	7500	7/27	40	10.2	12.1	12.2
POUND PILLAR	8250	7/27	50	10.6	-	15.1
POUND PILLAR	8100	7/26	51	32.2	13.4	12.3
POUND PILLAR	8900	7/26	35	8.2	10.3	8.3
POUND PILLAR	2450	7/27	20	6.8	6.4	-
POUND PILLAR	6000	7/26	65	10.8	23.1	27.7
POUND PILLAR	8000	7/26	34	13.2	-	17.2
POUND PILLAR	4620	7/27	52	17.4	-	-
POUND PILLAR	1400	7/27	31	0.0	10.5	9.2
POUND PILLAR	6950	7/27	50	0.0	-	-
POUND PILLAR	6250	7/26	31	7.7	9.6	10.0
POUND PILLAR	4200	7/26	57	10.0	6.7	-

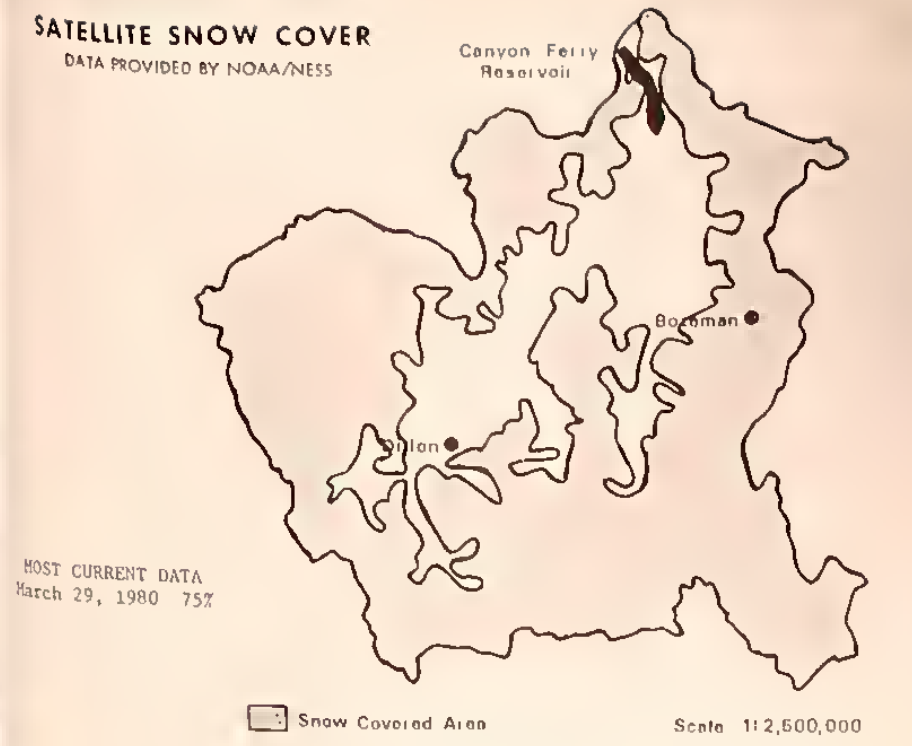
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ADAMS TRAIL	4000	7/22	33	1.4	14.7	11.6
ADAMS CREEK LIMP	4200	7/22	42	11.0	17.4	17.7
ADAMS CREEK	4300	7/27	53	14.0	16.1	18.9
ADAMS CREEK	4000	7/26	20	6.7	7.1	6.4
ADAMS CREEK	4300	7/25	51	11.6	13.5	19.2
ADAMS CREEK	4300	7/25	SP	13.1	-	18.7
ADAMS CREEK	4300	7/25	39	11.4	13.2	12.2
ADAMS CREEK	4300	7/27	74	19.2	19.0	17.9
ADAMS CREEK	4300	7/27	94	32.4	35.0	42.7
ADAMS CREEK (IMP)	4300	7/27	106	43.2	-	44.2
ADAMS CREEK	4300	7/27	41	12.2	15.6	14.1
ADAMS CREEK PILLON	4300	7/27	SP	7.7	13.6	-
ADAMS LAKE	4450	7/25	66	27.1	24.0	34.2
ADAMS LAKE PILLON	4450	7/25	SP	28.4	-	31.6
ADAMS LAKE TRAIL	4200	7/21	57	13.4	25.4	23.3
ADAMS LAKE	4250	7/26	35	11.1	12.9	12.5
ADAMS LAKE	4370	7/23	70	23.1	29.0	34.4
ADAMS LAKE	4850	7/27	20	21.6	22.3	-
ADAMS LAKE	4530	7/29	23	6.9	-	10.4
ADAMS LAKE	6600	7/29	40	11.3	9.0	12.4
ADAMS BASIN	6000	7/31	120	47.2	46.1	53.6
ADAMS BASIN PILLON	6000	7/31	SP	41.4	41.8	51.9
ADAMS CREEK	5900	7/31	111	42.4	45.1	49.9
ADAMS CREEK	7650	7/28	52	15.0	18.4	20.3
ADAMS CREEK	5450	7/30	32	4.1	8.7	9.4
ADAMS CREEK (IMP)	6310	7/27	49	16.0	19.6	17.2
ADAMS CREEK	7500	7/26	29	8.5	8.2	6.5
ADAMS LAKE TRAIL	7200	7/27	37	10.5	30.4	10.5
ADAMS LAKE	6050	7/27	24	6.1	8.2	7.1
ADAMS CREEK	5300	7/25	24	4.4	-	11.5
ADAMS (IMP)	7200	7/25	33	11.2	-	11.5
ADAMS MILL	6200	7/27	41	21.7	14.2	15.8
KINSHENNA	3890	7/29	23	6.4	5.4	8.2
KINSHENNA CAMP	3720	7/27	0	6.0	6.1	1.0
LAKE CAMP TRAIL	7850	4/01	36	11.5	10.5	10.1
LAKE CREEK	8100	4/06	34	9.2	6.6	10.3
LAKEVIEW CANYON	6930	7/26	43	10.2	13.6	13.6
LAKEVIEW RIDGE	7410	7/28	38	9.9	12.3	12.1
LATHAM SPRINGS (IMP)	7650	7/27	86	31.2	34.6	34.4
LEMMI PASS	7480	7/28	34	9.5	10.0	9.9
LEMMI RIDGE	8100	7/28	38	10.4	10.6	10.0
LEMMI RIDGE PILLON	8100	7/28	SP	9.7	11.6	11.9
LICK CREEK	8660	7/29	47	12.9	10.1	11.3
LICK CREEK PILLON	8660	7/29	SP	11.1	10.2	11.1
LITTLE PASS	7400	7/27	51	15.5	13.6	17.6
LOHAN CREEK	4300	4/02	26	7.2	8.2	7.7
LOME MOUNTAIN	8000	4/01	80	23.4	19.2	24.6
LOOKOUT (IMP)	5250	7/31	82	26.1	32.4	37.1
LOST HORSE	5940	7/26	76	27.0	30.9	35.2
LOST SOUL	4600	7/26	42	10.0	13.2	16.8
LOVER THIN	7900	7/25	63	18.7	19.0	22.8
LOWRECHT FLUME	4200	7/29	14	5.6	4.0	6.5
LOWRECHT FLUME PILLON	3450	7/29	SP	4.7	5.3	16.4
LOWRECHT FOREST # 3	3450	7/29	21	5.7	7.9	7.6
LOWRECHT FOREST # 4	4650	7/30	9	2.0	2.0	2.9
LOWRECHT FOREST # 6	4040	7/29	6	2.9	3.2	2.9
LOWRECHT HYDROPOLO	4200	7/29	12	4.3	3.4	3.7
LUPINE CREEK TRAIL	7300	7/31	39	9.5	11.0	11.1
MAJORS PASS	7750	7/24	71	22.8	23.6	23.9
MAJORS PLATEAU PILLON	7750	7/24	SP	22.3	25.2	24.0
MARY GLACIER	4960	7/31	64	21.4	19.9	-
MARY GLACIER PILLON	4960	7/31	SP	18.9	16.5	-
MARY PASS	5250	7/28	51	15.3	17.5	19.2
MAYNARD CREEK	6210	7/26	48	13.2	17.0	14.9
MAYNARD CREEK PILLON	6210	7/26	SP	10.8	12.4	12.6
MAYNARD MILL CREEK	7850	7/25	47	13.0	14.3	10.2
MILL CREEK	7500	7/26	48	14.0	14.2	14.8
MILNER CREEK	4000	7/26	57	17.0	17.0	19.2
MILNER LAKE #6 (IMP)	6600	7/28	40	12.6	9.2	11.5
MILNER PASS	8800	7/26	74	23.0	25.1	29.1
MILNER PASS PILLON	8800	7/26	SP	19.1	-	-
MILNER CREEK (IMP)	6200	7/27	43	12.2	15.0	17.1
MILNER RESERVOIR	6650	7/25	30	4.7	5.5	-
MOUNT LOCKHART	6400	7/30	67	20.2	24.6	23.9
MOUNT LOCKHART PILLON	6400	7/30	SP	19.0	23.6	23.6
MOUNT LAKE	7650	4/01	56	19.2	18.6	22.4
MOUNT MORRIS	6900	7/28	51	15.4	14.7	17.3
MOUNT MOUNTAIN	5600	7/27	50	30.7	26.3	-
MOUNT PILLON	5540	7/31	42	13.2	18.0	16.3
MOUNT PILLON PILLON	5540	7/31	SP	12.6	-	-
MOUNT PILLON CREEK	5500	7/28	29	7.6	7.3	7.7
MOUNT PILLON PASS	6040	7/31	43	13.4	20.0	19.0
MOUNT PILLON	6040	7/31	109	19.9	19.1	46.3
MOUNT PILLON	3600	7/28	SP	33.6	34.4	41.2
MOUNT PILLON (IMP)	7500	7/28	7	2.2	3.4	4.3
MOUNT PILLON CREEK	6250	7/30	35	9.4	11.3	11.4
MOUNT PILLON CREEK	6250	7/29	49	13.2	14.4	13.9
MOUNT PILLON CREEK	6250	7/29	SP	12.1	13.5	14.4
MOUNT PILLON	6350	4/03	97	35.9	40.4	46.4
MOUNT PILLON	7250	7/25	37	8.4	9.7	9.4
MOUNT PILLON	7400	7/31	32	7.6	10.1	10.4
MOUNT PILLON	7400	7/31	SP	6.9	11.4	9.8
MOUNT PILLON	7500	4/06	71	22.8	13.2	17.5
MOUNT PILLON	4300	7/31	34	15.0	16.6	-
MOUNT PILLON	4300	7/31	51	15.2	20.6	21.1
MOUNT PILLON	7200	7/29	76	26.6	27.6	33.1
MOUNT PILLON PILLON	7200	7/29	33	8.1	9.6	11.5
MOUNT PILLON CREEK	6650	7/29	SP	8.4	9.2	12.0
MOUNT PILLON CREEK PILLON	6650	7/29	33	9.1	12.0	-
MOUNT PILLON CREEK	6200	7/30	SP	3.1	15.1	-
MOUNT PILLON	5930	7/30	21	4.5	8.9	4.9
MOUNT PILLON PILLON	5930	7/30	70	22.6	-	-
MOUNT PILLON PASS	5930	7/30	SP	22.6	-	-
MOUNT PILLON	5300	7/25	26	6.4	7.0	6.2
MOUNT PILLON	5300	7/25	35	9.5	7.8	8.2
MOUNT PILLON	5300	7/25	77	24.6	38.0	30.0
MOUNT PILLON	5300	7/25	SP	21.4	38.0	30.3
MOUNT PILLON	6500	7/25	28	7.4	9.2	8.0
MOUNT PILLON	6500	7/25	SP	8.0	8.1	-
MOUNT PILLON	7300	7/25	39	12.1	15.9	15.9
MOUNT PILLON	6000	7/25	64	14.0	14.0	20.6
MOUNT PILLON	6240	7/27	74	26.8	15.7	-
MOUNT PILLON	5600	6/23	45	11.2	12.1	11.0
MOUNT PILLON	6160	7/25	53	15.4	15.4	15.4
MOUNT PILLON	6000	7/25	54	15.4	15.4	15.4

[illegible]

BARKER LAKES PILLow	8250	3/27	SP	12.7	-	-
BASIN CREEK PILLow	7180	3/27	SP	6.7	-	-
HADGER PASS PILLow	6900	3/28	SP	6.8	-	-
BEAGLE SPRINGS PILLow	8850	4/06	SP	9.9	-	-
BLOODY DICK PILLow	7600	3/27	SP	10.4	12.3	-
CLOVER MEADOW PILLow	8600	4/06	SP	18.3	-	-
CRYSTAL LAKE PILLow	6100	4/01	SP	12.3	12.4	-
DIVIDE PILLow	7800	4/06	SP	11.8	10.0	12.8
MULE CREEK	8300	3/28	43	11.8	-	-
TEPEE CREEK PILLow	8000	4/06	SP	12.7	13.3	13.9
WOOD CREEK	5960	3/31	40	11.0	-	-
WOOD CREEK PILLow	5960	3/31	SP	11.0	-	-



The NWS projects temperatures for April, 1980, to be near normal in the western quarter of Montana and below normal in other areas. Precipitation is estimated to be above normal over most of the state.



	AVERAGE
--	---------

DATE	PERCENT SNOW COVER	SNOWLINE ELEVATION IN FEET
November 6, 1979	45	6830
November 12, 1979	45	6830
November 20, 1979	84	5120
November 29, 1979	89	4830
December 11, 1979	80	5340
December 18, 1979	60E	6250
December 23, 1979	88	4890
December 30, 1979	72	5720
January 6, 1980	100	3800
January 16, 1980	70E	5820
January 19, 1980	96	4300
January 28, 1980	93	4530
February 8, 1980	92	4570
February 16, 1980	100	3800
February 25, 1980	81	5290
March 1, 1980	90	4760
March 20, 1980	75	5590
March 22, 1980	72	5720
March 29, 1980	75	5590

RESERVOIR STORAGE (THOUSANDS OF CUBIC FEET) AND DRAINAGE AREA (SQUARE MILES)

Best or Size	Reservoir	Usable Capacity	Total	Usable Storage	Storage
	<u>COLUMBIA</u>				
Kootenai	Kootenai	5,694.0	2,027.0	2,299.0	--
Flathead	Hungry Horse	3,428.0	2,730.0	2,187.0	2,016.0
	Flathead Lake	1,791.0	632.7	664.7	775.7
	Camas (4)	45.2	18.4	21.1	23.8
	Mission Valley (8)	100.3	30.1	61.9	41.1
Clark Fork	Georgetown Lake	31.0	23.1	25.0	24.0
	Lower Willow Creek	4.9	1.7	.7	1.9
	Nevada Creek	12.6	3.6	5.8	7.8
	Noxon Rapids	334.6	139.4	320.8	191.9
Bitterroot	Painted Rocks	31.7	--	12.8	17.6
	Como	34.9	--	--	15.6
	<u>MISSOURI</u>				
Beaverhead	Lima	84.0	15.5	32.9	42.6
	Clark Canyon	257.2	159.5	163.3	143.7
Ruby	Ruby	38.8	--	14.5	--
Madison	Hobgen Lake	377.5	268.9	223.3	245.5
	Ennis Lake	41.0	35.8	34.6	34.4
	Middle Creek	8.0	3.5	3.7	4.0
Gallatin	Canyon Ferry	2,043.0	1,488.0	1,403.0	1,527.0
Missouri	Hauser & Helena	61.9	63.0	63.0	59.8
	Lake Helena	10.4	10.9	10.9	9.8
	Holter Lake	81.9	51.8	80.1	66.2
	Fort Peck Lake	18,910.0	15,680.0	17,980.0	15,480.0
Smith	South River	10.6	7.1	--	7.7
	Newlan Creek	12.4	8.6	9.6	--
	Bair	7.0	5.4	--	5.4
Muskeleshell	Martinsdale	72.2	--	--	52.6
	Deadman's Basin	99.0	39.8	65.3	47.0
Sun	Gibson	32.2	24.6	26.9	22.7
	Willow Creek	32.0	18.8	19.6	16.5
	Plushun	11.9	--	--	6.9
Marlas	Lower Two Medicine	19.2	--	--	12.3
	Four Horns	30.0	14.3	22.0	16.9
	Swift	111.9	62.3	94.2	71.9
	Lake Frances	1,347.0	524.4	580.2	551.9
Milk	Elwell (Tiber)	3.5	2.8	2.2	1.9
	Beaver Creek	127.2	53.3	129.5	89.1
	Fresno	66.8	41.4	45.2	41.5
	Nelson				
	<u>HUDSON BAY</u>				
St. Mary's	Lake Sherburne	66.2	13.0	16.0	25.1
	<u>YELLOWSTONE</u>				
Stillwater	Mystic Lake	21.0	18.2	8.2	4.3
Clark's Fork	Conney	27.4	17.9	12.5	16.4
Tongue	Tongue River	68.0	34.2	27.2	44.0
Bighorn	Bighorn Lake	1,356.0	843.2	887.3	552.1

verage based on 1963-77 period.

MOUNTAIN SNOWPACK

The snowpack improved in all drainages during March. In general, the April snowpack is about ten percent greater than it was on March 1. Frequent storm systems brought above average precipitation to the mountains and very little melt has occurred above the valley floors. This has helped to increase the deficient early season snowpack. Most areas now have about 80 percent of average water content stored in the mountain snowpack.

There are some small areas in the extreme southwestern headwaters and in the Snowy Mountains near Lewistown where snow cover is near average.

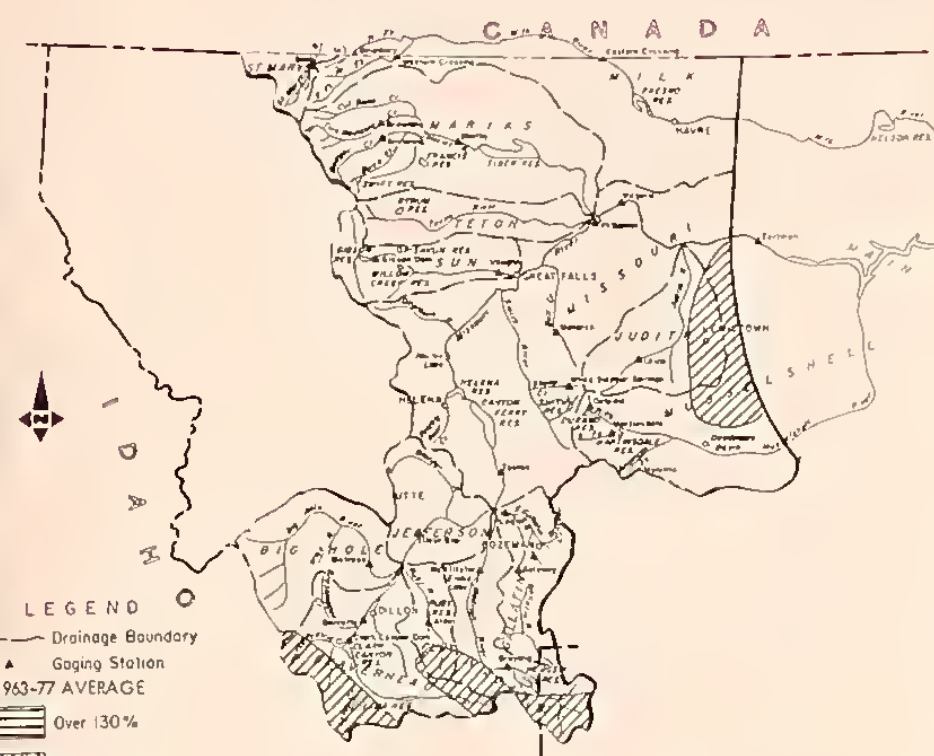
If good snowfall patterns continue through April and temperatures remain cool, the current conditions could improve even more. However, deficient precipitation and above normal temperatures will cancel out any improvements that occurred in March.



WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" from Reservoir to Outlet Supply.

STREAM or AREA	Spring Season	Late Season
Beaverhead	fair	fair
Ruby	fair	fair
Big Hole	fair	poor
Boulder	fair	fair
Jefferson	fair	fair
Madison	fair	fair
Gallatin	fair	fair
West-Side Missouri	fair	poor
Smith-Belt	fair	poor
Sun	fair	poor
Teton	fair	poor
Marias	fair	poor
Judith	fair	poor
Musselshell	fair	poor
Milk	fair	fair
Bear Paws	fair	fair
St. Mary's	fair	fair



MISSOURI RIVER & HUDSON BAY DRAINAGES
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

LEGEND
— Drainage Boundary
▲ Gaging Station
%1963-77 AVERAGE
Over 130%
110-130%
90-110%
70-90%
Under 70%

STREAMFLOW FORECASTS

The improved snowpack situation has resulted in an increase in forecasted runoff. Spring and summer streamflow is now expected to be in the 70 to 80 percent of average range for Missouri River headwater streams, and 60 to 70 percent of average for the Missouri River below Canyon Ferry Reservoir and tributary streams entering the Missouri below Canyon Ferry. The St. Mary's River and Milk River are forecast to have 10 to 15 percent below average runoff.

Late season shortages of irrigation water are expected to occur on most streams, however, they are not expected to be as severe as was anticipated last month.

Temperatures and precipitation will be critical factors in how severe these shortages may be. Near average mountain precipitation and cool temperatures will help to maintain or increase the snowpack levels and will improve the late season runoff potential. Deficient moisture and warm temperatures will create early season runoff providing less water availability during the irrigation period.

BASIN, STREAM, and/or FORECAST POINT	THIS YEAR FORECAST		PAST RECORD THOUSAND ACRES FEET		THIS YEAR FORECAST		PAST RECORD THOUSAND ACRES FEET	
	THOUSAND ACRES FEET	PERCENT OF AVERAGE	LAST YEAR	AVERAGE	THOUSAND ACRES FEET	PERCENT OF AVERAGE	LAST YEAR	AVERAGE
	PERIOD: APRIL - SEPTEMBER				PERIOD: APRIL - JULY			

RED ROCK RIVER near Menida (1)	82.0	75	110	76.0	74	103
BEAVERHEAD RIVER near Grant (2)	120	70	102	171	104	70
BEAVERHEAD RIVER at Barratts (2)	162	72	226	140	71	93.4
RUBY RIVER near Alder	88.0	84	105	74.0	83	89.0
BIG HOLE RIVER near Melrose	520	66	792	480	66	730
BOULDER RIVER near Boulder	73.0	71	89.4	103	68.5	71
WILLOW CREEK near Harrison	15.0	70	21.5	13.5	70	19.2
NADISON RIVER near Crayling (3)	420	80	382	523	80	296
NADISON RIVER near McAllister (4)	730	82	641	892	83	512
GALLATIN RIVER near Gateway	447	78	572	385	79	488
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)	26.6	88	25.0	30.3	88	26.2
HYALITE CREEK near Bozeman (6)	39.5	83	47.4	34.5	84	41.0
GALLATIN RIVER at Logan	460	71	649	395	71	557
MISSOURI RIVER at Toston (7)	1,867	70	1,980	1,620	70	1,718
SHEEP CREEK near White Sulphur Springs	15.8	69	23.9	13.5	68	20.7
SUN RIVER at Gibson Dam (8)	405	70	471	580	70	428
BELT CREEK near Monarch	88.0	60	146	80.0	60	134
MISSOURI RIVER at Fort Benton (9)	2,714	65	4,148	2,350	65	3,640
TWO MEDICINE CREEK near Browning (10)	200	77	259	190	78	244
BADGER CREEK near Browning	97.0	73	133	83.0	72	116
MARIAS RIVER near Shelby	404	70	468	577	70	443
MISSOURI RIVER at Virgelle (11)	3,133	65	4,793	2,700	64	4,238
SOUTH FORK JUDITH RIVER near Utica	3,454	66	5,214	3,000	65	4,586
NORTH FORK MUSSELSHELL RIVER near Delpine	3.6	56	6.4	2.9	53	5.5
SOUTH FORK MUSSELSHELL RIVER near Martinsdale	35.5	58	61.5	33.5	58	57.6
MISSOURI RIVER below Fort Peck Dam (11)	3,319	67	4,929	2,900	66	4,381
MILK RIVER at Eastern Crossing	223	87	256			
INFLOW LAKE SAKAKAWA, ND (11)	9,820	73	13,450	8,900	73	12,239

SAKATCHEWAN RIVER BASIN

SWIFTCURRENT CREEK at Sherburne (12)	115	87	132	100	87	115
ST. MARY'S RIVER near Babb (12)	428	86	498	365	86	426

SUMMARY OF SNOW MEASUREMENTS

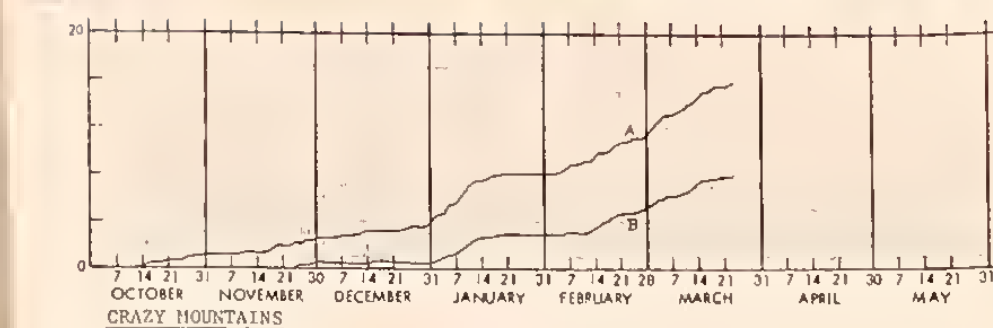
(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUBWATERSHED	Number of Gaging Stations	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Beaverhead	19	92	92
Ruby	9	105	88
Big Hole	19	87	80
Boulder	10	84	89
Jefferson	57	91	86
Madison	25	92	86
Gallatin	17	99	84
Missouri Headwater	99	93	86
West-side Missouri (Toston-Cascade)	7	77	85
Smith & Belt	6	78	76
Missouri Main-stem	13	78	80
Teton & Sun	8	73	78
Marias	4	79	77
Marias-Teton-Sun	12	76	77
Judith	6	83	80
Musselshell	7	80	86
Judith-Musselshell	13	81	83
Milk	6	58	64
Bear Paws	5	35	46
Missouri (Total)	139	89	84
Saskatchewan			
St. Mary's	2	94	83
Bow River in Alberta	3	126	109

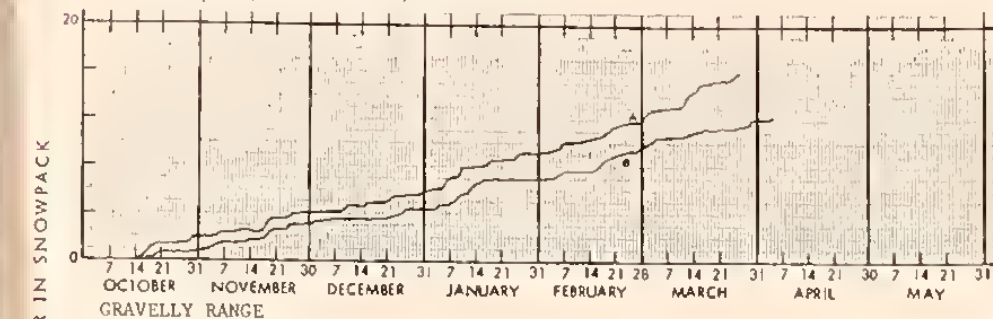
- Adjusted for storage in Lima Reservoir.
- Adjusted for storage in Lima & Clark Canyon Reservoirs.
- Adjusted for storage in Hobgen Lake.
- Adjusted for storage in Hobgen Lake & Ennis Lake.
- Sum West Fork Hyalite Creek & East Fork Hyalite Creek above the reservoir.
- Adjusted for storage in Middle Creek Reservoir.
- Adjusted for storage in Lima, Hobgen, Ennis, & Clark Canyon Reservoirs.
- Adjusted for storage in Gibson Reservoir & diversions.
- Adjusted for storage in Lima, Clark Canyon, Hobgen, Ennis, Gibson, Plankton, Willow Creek, & Canyon Ferry.
- Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
- Adjusted for all upstream reservoirs.
- Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION
WITH THE NATIONAL WEATHER SERVICE

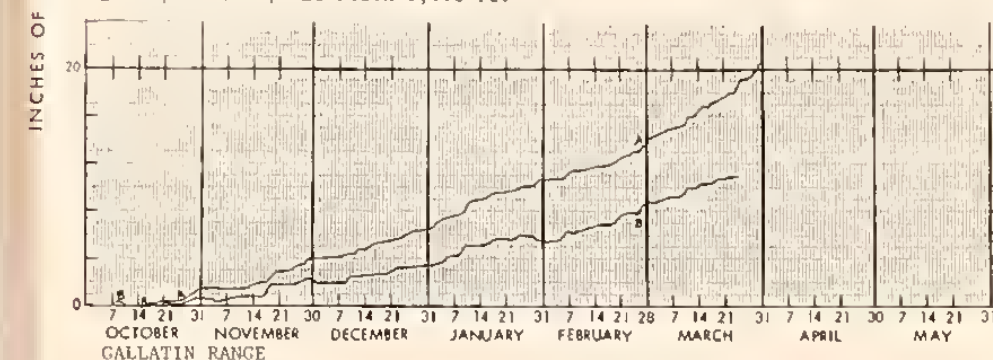
SNOW PILLOW DATA



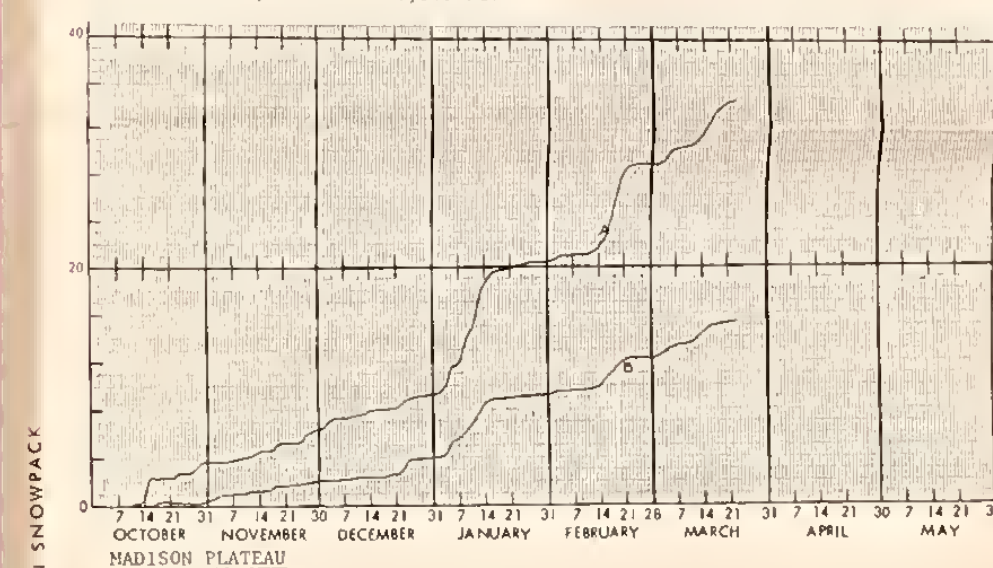
A South Fork Shields, elevation 8,100 ft.
B Porcupine, elevation 6,500 ft.



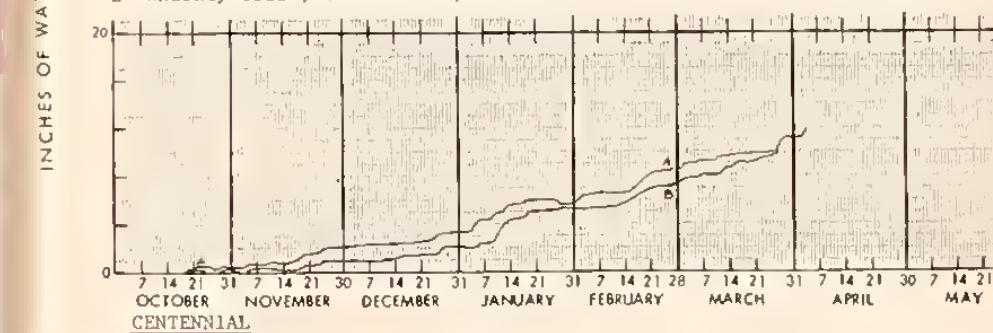
A Clover Meadow, elevation 8,800 ft.
B Teepee Creek, elevation 8,000 ft.



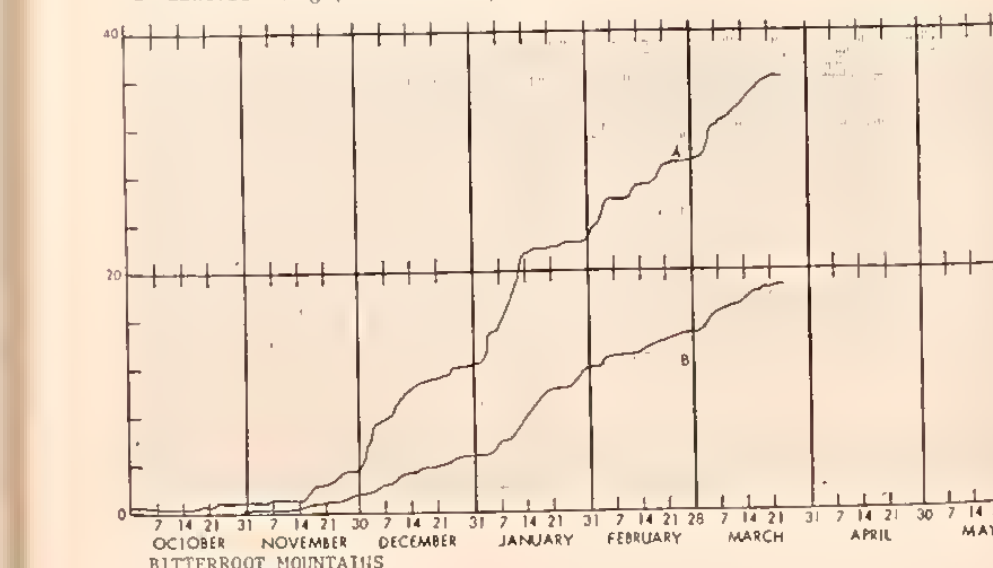
A Shower Falls, elevation 8,100 ft.
B Lick Creek, elevation 6,860 ft.



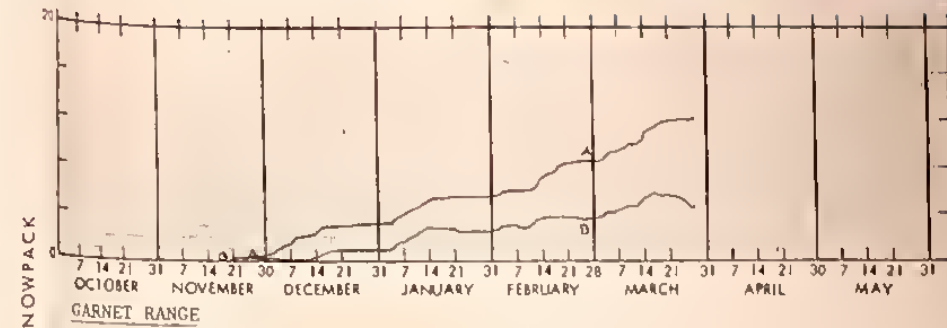
A Black Bear, elevation 7,950 ft.
B Whiskey Creek, elevation 6,800 ft.



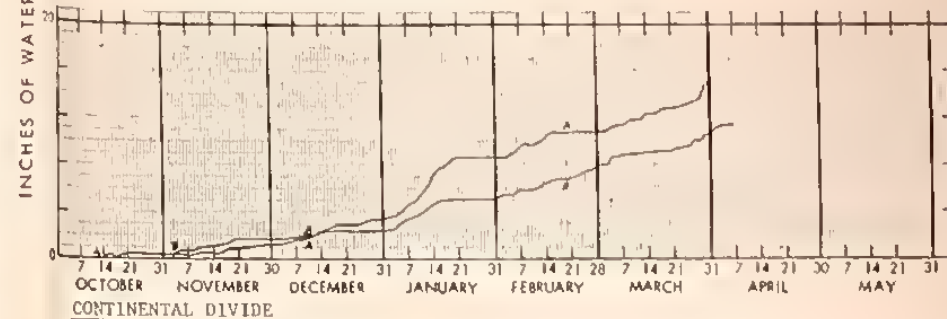
A Divide, elevation 7,800 ft.
B Lakeview Ridge, elevation 7,400 ft.



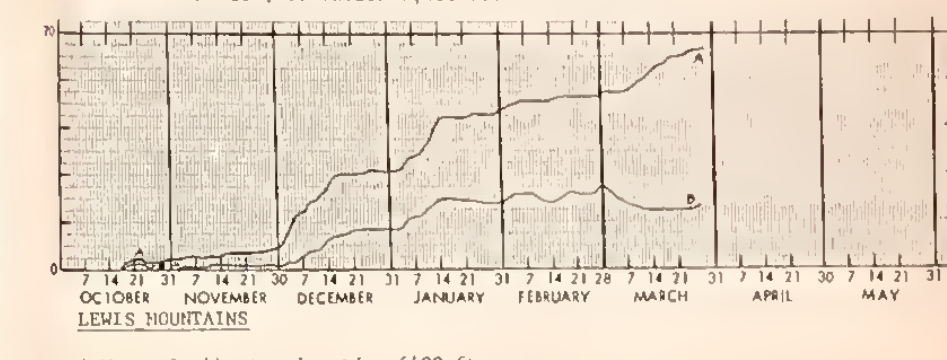
A Twin Lakes, elevation 6,400 ft.
B Twelvemile Creek, elevation 5,600 ft.



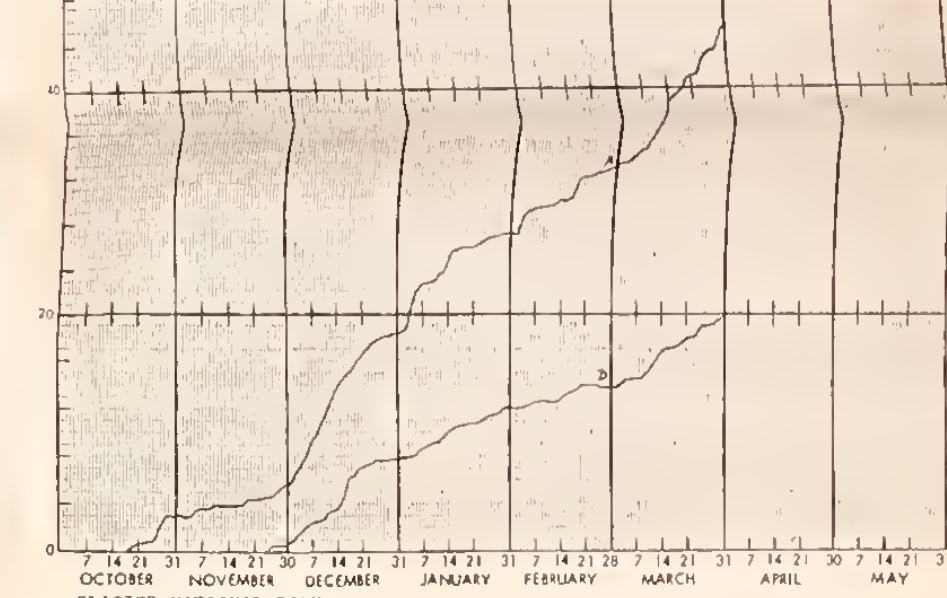
A North Fork Elk Creek, elevation 6,250 ft.
B Lubrecht Flume, elevation 4,680 ft.



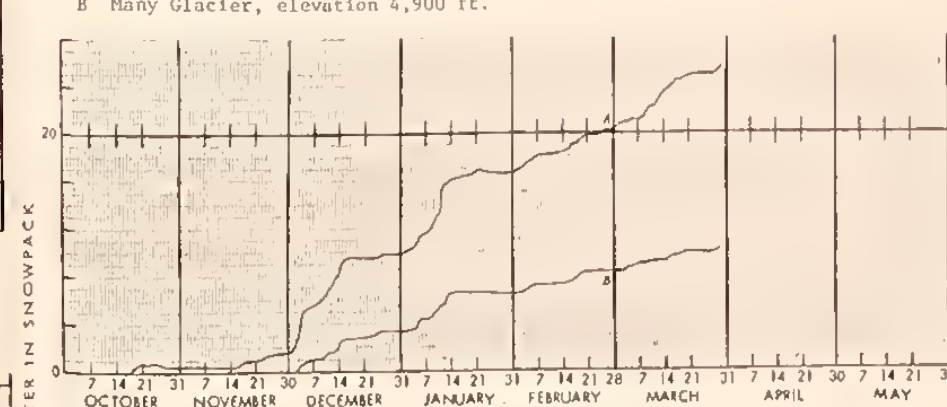
A Rocker Peak, elevation 8,000 ft.
B Frohner Meadow, elevation 6,480 ft.



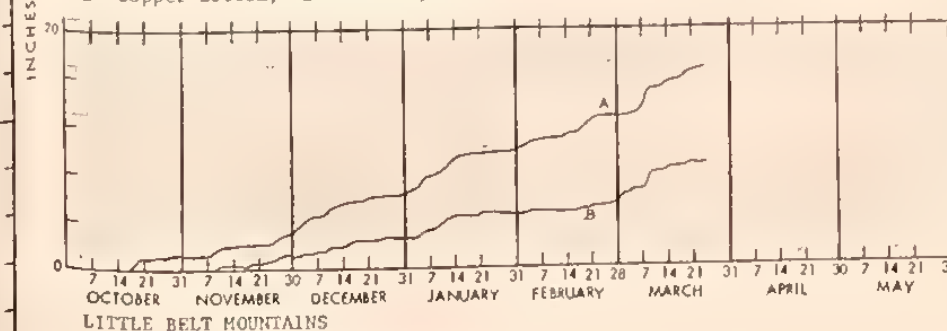
A Mount Lockhart, elevation 6,400 ft.
B Waldron, elevation 5,600 ft.



A Flattop Mountain, elevation 6,300 ft.
B Many Glacier, elevation 4,900 ft.

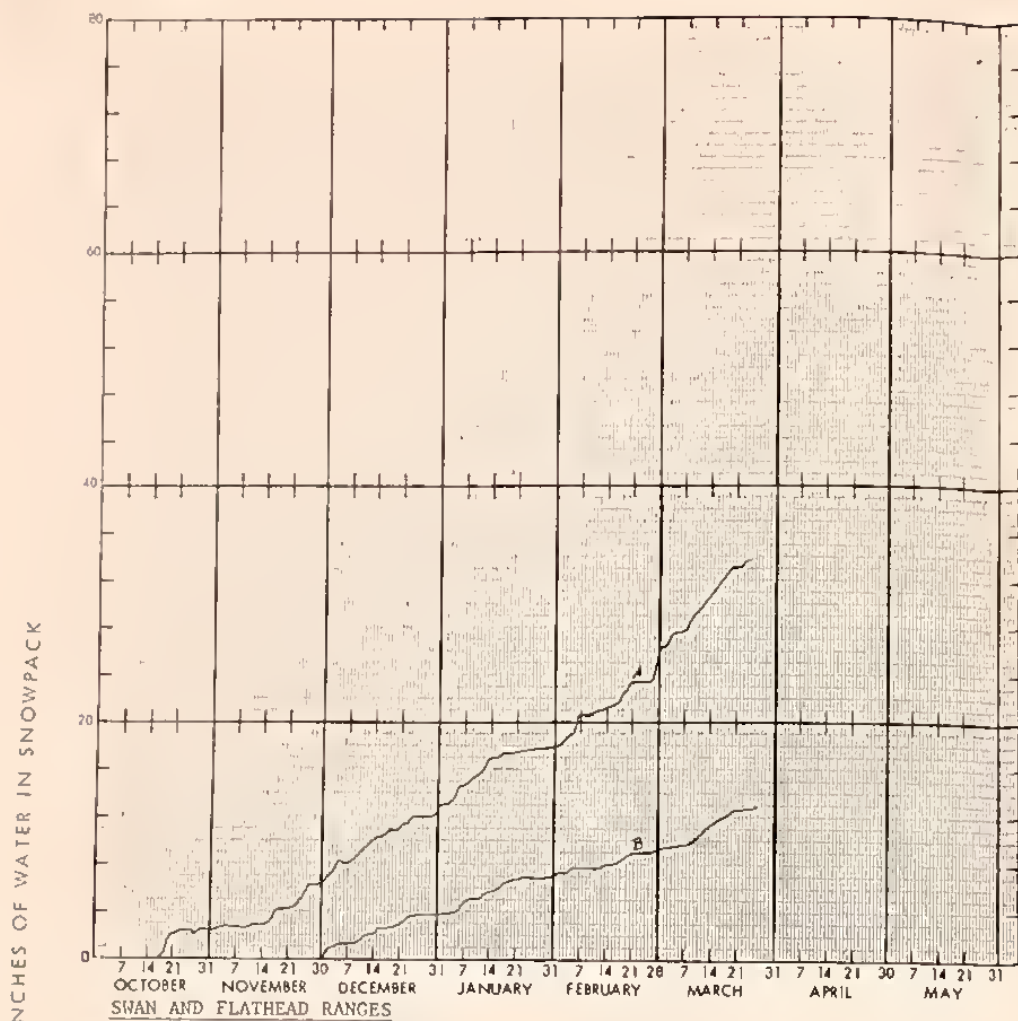


A Copper Camp, elevation 6,950 ft.
B Copper Bottom, elevation 5,200 ft.

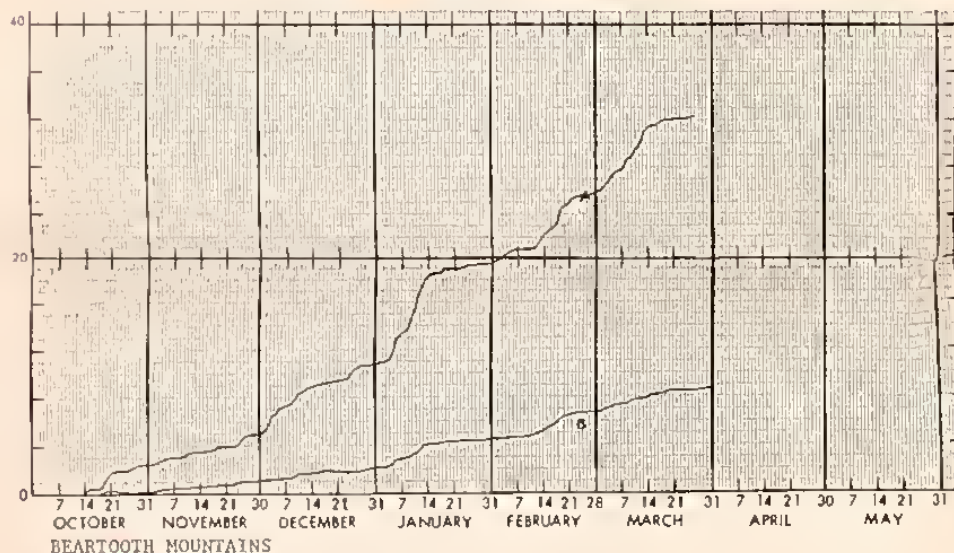


A Spur Park, elevation 8,100 ft.
B Deadman Creek, elevation 6,450 ft.

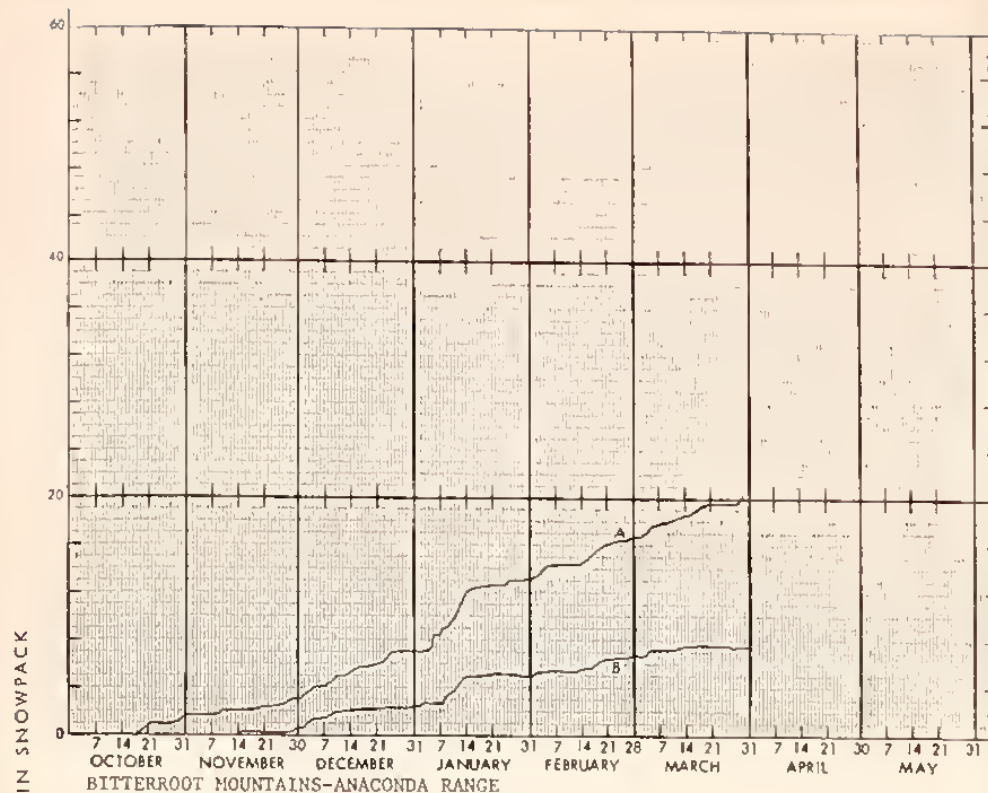
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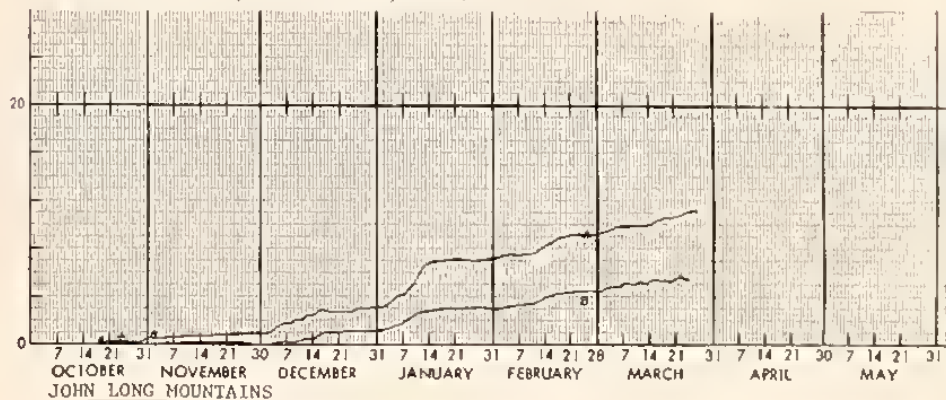
A Noisy Basin, elevation 6,040 ft.
B Emery Creek, elevation 4,350 ft.



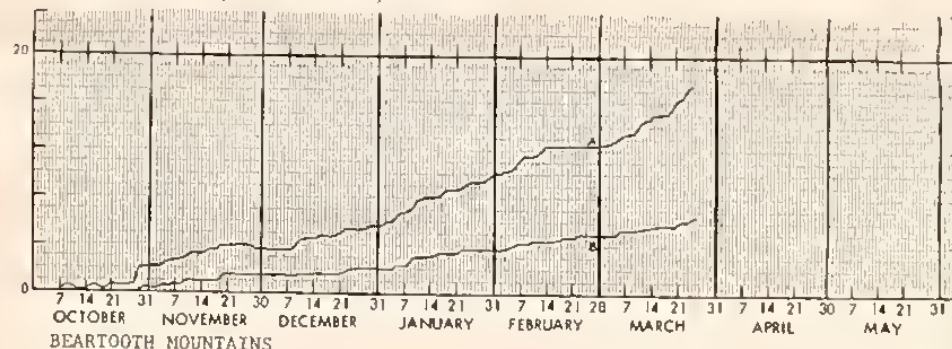
A Fisher Creek, elevation 9,100 ft.
B Northeast Entrance, elevation 7,350 ft.



A Saddle Mountain, elevation 7,900 ft.
B Calvert Creek, elevation 6,430 ft.



A Black Pine, elevation 7,100 ft.
B Combination, elevation 5,600 ft.



A Cole Creek, elevation 7,850 ft.
B Silver Run, elevation 6,630 ft.

AGENCIES & ORGANIZATIONS COOPERATING in Montana Snow Surveys

GOVERNMENT AGENCIES

Canada

Water Survey of Canada, Department of the Environment, Calgary
Water Resources Service, Department of Lands, Forests, and
Water Resources, British Columbia
Alberta Environment, Edmonton, Alberta

United States

DEPARTMENTS OF:

Army..... Corps of Engineers
Agriculture... Forest Service
Soil Conservation Service
Commerce... National Environmental Satellite Service
National Weather Service
Interior..... Bonneville Power Administration
Bureau of Indian Affairs
Fish & Wildlife Service
Geological Survey
National Park Service
Water & Power Resources Service

STATE OF MONTANA

Conservation Districts
Department of Fish, Wildlife & Parks
Department of Natural Resources & Conservation
Agricultural Experiment Station
University of Montana, School of Forestry
State Forester

PRIVATE ORGANIZATIONS & INDIVIDUALS

Butte Water Company
Montana Power Company
The Anaconda Company
Big Sky of Montana
Jack & Scott Graveley
Arthur Christensen
Jack Fenton